IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A radio communication apparatus which uses a low-intermediate frequency to receive a multiband OFDM signal for hopping a center frequency at a specified band interval, said apparatus comprising:

frequency conversion means for converting the received multiband OFDM signal into a low-intermediate frequency signal;

an intermediate frequency filter to remove unnecessary waves in an low-intermediate frequency signal frequency-converted by said frequency conversion means, the intermediate frequency filter including a Hilbert bandpass filter formed by two real filters having a same characteristic and interconnected by a gyrator;

AD conversion means for AD converting the low-intermediate frequency signal into a digital signal using a specified sampling frequency to induce frequency folding in the digital signal; and

OFDM demodulation means for demodulating the digital signal into a sequence of sub-carriers along a frequency axis so as to perform fast spectrum analysis,

wherein said OFDM demodulation means sorts, after demodulation, the sequence of sub-carriers changed due to the frequency folding caused by the specified sampling frequency during AD conversion, and a same absolute value is used for a design frequency of a ladder-type low-pass filter as a real filter and for a center frequency of said Hilbert bandpass filer and an integer ratio is used for an element value of a ladder-type prototype filter.

Claim 2 (Currently Amended): The radio communication apparatus according to claim 1, wherein any of fast Fourier transform, wavelet transform, and Hartley transform is used for said demodulation so as to perform fast spectrum analysis on an OFDM signal.

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Claim 3 (Original): The radio communication apparatus according to claim 1, wherein said frequency conversion means mixes a reception signal with a local signal to generate low-intermediate frequency signal.

Claim 4 (Original): The radio communication apparatus according to claim 1, wherein said frequency conversion means mixes a reception signal with a local signal having a local frequency apart from a reception frequency by half of a band interval for frequency hopping to generate a low-intermediate frequency signal composed of a low-intermediate frequency half said band interval.

Claim 5 (Original): The radio communication apparatus according to claim 1, wherein AD conversion means samples analog signals using a sampling frequency twice as high as said low-intermediate frequency.

Claim 6 (Original): The radio communication apparatus according to claim 1, wherein AD conversion means samples analog signals using a sampling frequency equivalent to a band interval for frequency hopping.

Claims 7-9 (Canceled).

Claim 10 (Currently Amended): A radio communication apparatus which uses a low-intermediate frequency to receive a multiband OFDM signal for hopping a center frequency at a specified band interval, said apparatus comprising:

frequency conversion means for converting the received multiband OFDM signal into a low-intermediate frequency signal;

an intermediate frequency filter to remove unnecessary waves in an low-intermediate frequency signal frequency-converted by said frequency conversion means, the intermediate frequency filter including a Hilbert bandpass filter formed by two real filters having a same characteristic and interconnected by a gyrator;

AD conversion means for AD converting the low-intermediate frequency signal into a digital signal using a specified sampling frequency to induce frequency folding in the digital signal; and

OFDM demodulation means for demodulating the digital signal into a sequence of sub-carriers along a frequency axis so as to perform fast spectrum analysis,

wherein said OFDM demodulation means sorts, after demodulation, the sequence of sub-carriers changed due to the frequency folding caused by the specified sampling frequency during AD conversion, ~~The radio communication apparatus according to claim 8,wherein~~ the beginning of a reception frame includes a preamble composed of a known sequence, [[;]] and ~~wherein~~ there is further provided preamble detection means for detecting a preamble in a reception signal using a sequence resulting from multiplying said known preamble sequence and said low-intermediate frequency together.

Claims 11-20 (Canceled).

Claim 21 (Currently Amended): A radio communication apparatus which uses a low-intermediate frequency to receive a multiband OFDM signal for hopping a center frequency at a specified band interval, said apparatus comprising:

a mixer configured to convert the received multiband OFDM signal into a low-intermediate frequency signal;

an intermediate frequency filter to remove unnecessary waves in an low-intermediate frequency signal frequency-converted by the mixer, the intermediate frequency filter including a Hilbert bandpass filter formed by two real filters having a same characteristic and interconnected by a gyrator;

an AD converter configured to convert the low-intermediate frequency signal into a digital signal using a specified sampling frequency to induce frequency folding in the digital signal; and

an OFDM demodulator configured to demodulate the digital signal into a sequence of sub-carriers along a frequency axis so as to perform fast spectrum analysis,

wherein the OFDM demodulator sorts, after demodulation, the sequence of sub-carriers changed due to the frequency folding caused by the specified sampling frequency during AD conversion, and a same absolute value is used for a design frequency of a ladder-type low-pass filter as a real filter and for a center frequency of said Hilbert bandpass filer and an integer ratio is used for an element value of a ladder-type prototype filter.